6. ETS

Timeline
1970-1992

Tobacco Institute

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ENVIRONMENTAL TOBACCO SMOKE TIMELINE: 1970 - 1992

TOBACCO INSTITUTE

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ENVIRONMENTAL TOBACCO SMOKE TIMELINE: 1970-1992

1971

March	Surgeon General Jesse L. Steinfeld writes in response to a letter from the National Association of Motor Bus Owners of a "growing body of literature" on "the effect of tobacco smoke on the nonsmoker."
December	The Interstate Commerce Commission orders designation of smoking sections in the rear of all interstate buses as of April, 1972, although the commission specifically states that smoking ban petitioners failed to demonstrate that second-hand smoke was harmful to passengers.

1972

January	Surgeon General Steinfeld releases the 1972 Surgeon General's Report to Congress on Smoking and Health, which includes a chapter on the effect of tobacco smoke on nonsmokers. The report notes that tobacco smoke "can contribute to the discomfort of many individuals" and can produce carbon monoxide levels that "may, depending on the length of exposure, be sufficient to be harmful to the health of an exposed person. This would be particularly significant for people who are already suffering from chronic bronchopulmonary disease and coronary heart disease."
January	The Federal Aviation Administration completes a study, conducted in cooperation with the Public Health Service, entitled "Health Aspects of Smoking in Transport Aircraft." The report concludes that tobacco smoke is "judged not to represent a health hazard to the nonsmoking passengers" but recommends segregation of smokers and nonsmokers to avoid nonsmoker irritation.
June	The Journal of the American Medical Association reports that 34 million Americans are sensitive to smoke because of existing medical conditions.

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1973

January	Responding to press inquiries following publication of the 1973 Surgeon General's report, TI states that "a completely fair and objective document ... would have pointed out that recent studies, including research by the Public Health Service itself, have repudiated earlier charges of harm to nonsmokers from cigarette smoke. Instead, incredibly, there is no mention of the subject at all. This contributes to continued misleading of the public through articles in the press which have no scientific foundation."
February	The California Medical Association releases a report claiming ill effects of tobacco smoke on the nonsmoker.
March	Briefing reporters at the mid-point of a five-year study of the effect of air pollution on respiratory illness, Environmental Protection Agency (EPA) officials suggest that parental smoking "has an influence on the respiratory disease experience of children. That is, the children...show more lower respiratory diseases than the children of nonsmoking parents." Reporting the briefing on the Nightly News, NBC-TV states, "The Environmental Protection Agency today released a study showing that exhaled cigarette smoke even endangers the health of nonsmokers who breathe it in."
May	The Civil Aeronautics Board orders airlines to segregate smokers and nonsmokers and to provide at least one nonsmoking area for each class of service, but specifically declines to incorporate the health record pending at the Federal Aviation Administration, basing its decision instead only on "annoyance and discomfort."
July	The Federal Aviation Administration withdraws its longstanding Advance Notice of Proposed Rulemaking regarding segregation of smokers on commercial aircraft, noting that "smoking aboard commercial aircraft does not represent a significant health hazard to nonsmoking passengers." FAA notes further that even the 1972 Surgeon General's report "did not contain evidence of any hazard to the health of nonsmokers from tobacco smoke generated in a well-ventilated environment.

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1974

March — The tobacco industry helps fund a conference entitled "Environmental Tobacco Smoke Effects on the Non-Smoker" sponsored by the University of Geneva. The proceedings are published in a supplement to the Scandinavian Journal of Respiratory Diseases.

April — American Health Foundation scientist Ernst Wynder states on NBC's morning program that he doesn't "believe that passive smoking really hurts the health of somebody who sits next to you, though it's aggravating."

July — The Los Angeles City Council's Public Health, Welfare and Environment Committee, considering smoking restriction legislation, notes Surgeon General Steinfeld's claim about the health hazard of ETS but states, "There have been since that time, however, studies and reports by various public health agencies which indicate that the smoke from other people's cigarettes may be unpleasant but that it is not harmful."

October — The Occupational Safety and Health Administration announces a request for data to help with preparations for "an environmental statement assessing the impact of a proposed standard for occupational exposure to carbon monoxide...." Action on Smoking and Health's John Banzhaf appeals to nonsmokers to submit requests that the standard include "protection from carbon monoxide generated by the smoking of cigarettes and other tobacco products."

1975

February — A report published in Lancet states, "Virtually all urban nonsmokers have measurable amounts of nicotine in their body fluids throughout most of their lives. It is derived from the indoor air they breathe and it requires no more than one or two smokers to contaminate a vehicle or building." The authors add, "The fact that some nicotine is present in the urine of almost all nonsmokers suggests that episodes of passive smoking are common in urban life," although they acknowledge

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that "the concentration of tobacco smoke in the experimental room was extreme and would not be tolerated by nonsmokers, or indeed by smokers, under normal circumstances."

April — An article by Harvard School of Public Health researchers Hinds and First regarding nicotine sampling in buses, trains, cocktail lounges and other locations is published in the New England Journal of Medicine. An accompanying editorial, by Harvard's Gary Huber, states that the data demonstrate that "in public places, nonsmokers could potentially consume 1/1000 to 1/100 of one filter cigarette per hour, a level of exposure that has no known serious association with disease."

May — American Health Foundation scientists Schmeltz, Hoffmann and Wynder publish a 17-page review of the literature on "The Influence of Tobacco Smoke on Indoor Atmospheres" in Prevention Medicine. The review concludes, "...[T]he extent of adverse health effects in humans due to passive smoking has not yet been firmly established. ...[W]e know of no data suggesting that passive inhalation of cigarette smoke increases the risk of developing lung cancer. ...[I]t appears that passive inhalation of tobacco smoke by nonsmokers or smokers does not increase their risk for chronic illnesses such as cancer of the respiratory tract, emphysema or cardiovascular disease."

December — Testifying in a tobacco case, ex-Surgeon General Luther Terry states, "My personal judgment is that it [tobacco smoke] is a hazard [for nonsmokers], but this has not been specifically proven." Most nonsmokers find smoke "unpleasant, obnoxious and very distasteful, but suffer no other effect," according to current research.

1976

July — TI issues a news release urging the Illinois Commerce Commission (ICC) to reject a proposal to ban smoking in 191 commuter train terminals in the Chicago metropolitan area. In an accompanying letter to the ICC, TI President Kornegay "cited a lack of medical evidence to support the contention

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that the nonsmoker can suffer health impairment by being in the presence of smokers in typical, everyday situations," according to the release. Kornegay cited a study undertaken by the Harvard School of Public Health suggesting that a nonsmoker would have to spend more than 100 consecutive hours in the smokiest environment to inhale the equivalent of one filter-tip cigarette, and noted that an editorial in the New England Journal of Medicine had stated, "Under the most severe concentrations of exposure in their study, the nonsmoker could consume an amount of tobacco so small that the risk of any adverse health effect would be non-existent on the basis of any available data in the literature today."

TI concedes that smoke could be an annoyance to some.

December — Dr. Wilbert Aronow publishes an article in Chest in which he states, "Increased carboxyhemoglobin levels may also result from passive smoking. Transient peak levels of carbon monoxide up to 90 ppm were measured passing across the face of a person who sat next to an individual smoking a cigarette for 10 minutes in an exposure chamber. Therefore, restrictions on smoking in public places are necessary to protect patients with coronary heart disease."

1977

November — The American Journal of Epidemiology reports a study concluding that household smoking had no effect on respiratory symptoms or lung function in children or adults.

1978

July — Dr. Aronow publishes in the New England Journal of Medicine results of a study of ETS exposure among 10 men with coronary heart disease. Aronow reports reduced ability to exercise, increased heart rate and increased blood pressure in study subjects following exposure to cigarette smoke.

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Reporting on the study, UPI states that the research "provided experimental information that what is called 'passive smoking' can have a dramatic effect on heart patients."

The Tobacco Institute responds to the study with a news release noting that "popular interpretations" of the experiment are "both extravagant and unfortunate." The release describes Aronow's research as "extremely limited observations" which "do not justify a conclusion that tobacco smoke which might normally be encountered by angina patients puts them at risk."

September — The Tobacco Subcommittee of the House Agriculture Committee holds a hearing on tobacco smoke and the nonsmoker to determine whether there is scientific justification for restricting public smoking. Witnesses include, among others, Dr. Edwin Fisher, who found no scientific basis for the conclusion that tobacco smoke represents a hazard to nonsmokers; Dr. Norman Heimstra, who opposed smoking restrictions; Dr. Kenneth Moser, who said "there is no...evidence" of a health hazard from ambient tobacco smoke; Dr. Theodor Sterling, who testified that tobacco smoke is a minor contributor to indoor air quality; Dr. John Salvaggio, who said there is no evidence that ETS causes allergies; and Dr. Suzanne Knoebel, who criticized Aronow's research.

Reporting on the hearing, UPI states, "Moving to counter allegations that cigarette smoke is hazardous to nonsmokers' health, a House Committee today put on a parade of medical and other experts who testified there is no such evidence."

September — The General Services Administration proposes smoking regulations for federal buildings it owns or leases, noting that "smoking...may create a potential hazard to those suffering from heart disease, respiratory disease or allergies."

October — Dr. G. H. Miller publishes a study in the Journal of Breathing claiming to show that nonsmoking women married to smokers die an average of four years earlier than women whose husbands do not smoke. The study is based on a population in Lancaster County, Pennsylvania.

December — Former Surgeons General Luther Terry and Jesse Steinfeld publish in cooperation with the

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California Medical Association and other researchers an 18-page paper entitled "Second-Hand Smoke and the Nonsmoker" which concludes that ETS causes disease in nonsmokers.

December — The International Archives of Occupational and Environmental Health publishes an article by Dr. Poul Astrup which concludes, "No data exist to document that any of the gas phase or particulate phase constituents of tobacco smoke reviewed in this study have a lasting adverse health effect in otherwise healthy individuals subjected to passive smoking."

1979

January — The Civil Aeronautics Board issues a "final rule" segregating pipe and cigar smokers on commercial aircraft and further requires that airlines reserve sections of at least two rows for nonsmokers within each class of service.

January — TI issues a publication entitled "Federal Government Chronology of Intervention in the Smoking and Health Controversy," covering the period from 1955 to 1979.

April — TI publishes "Science and Smoke," consisting of condensed congressional testimony from scientists about the lack of effect of cigarette smoke on nonsmokers.

July — Harvard researchers report in the American Journal of Epidemiology that "cigarette smoking by parents has a measurable effect on the pulmonary function of their children."

August — A Swiss researcher reports in the publication Tabak results of an analysis demonstrating that a nonsmoker would have to remain in a room with a smoker for 35 to 70 hours before being exposed to the equivalent of one cigarette.

September — Dr. Aronow reports in Chest that "tobacco components other than nicotine or carbon monoxide are responsible for a small decrease in exercise performance" in 12 patients suffering from angina pectoris.

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October — Boston scientists publish in Technology Review a study claiming that air in nonsmoking sections of aircraft "is no freer of particulates from tobacco smoke than is the air anywhere else on an airliner."

October — Swiss researchers report in Environmental Research that subjects exposed to one hour of constant cigarette smoke report "annoyance, subjective eye irritations, and eye blink increase" but note that "respiratory frequency and heart rate variability are not altered."

December — Speaking at a scientific conference, Dr. John Spengler discusses two articles soon to be published claiming that air in smokers' homes, and reflected in monitors placed on people near smokers, contains significantly more particulate matter than is found in nonsmoking areas. "The major source of indoor particulate matter is cigarette smoke," according to Spengler.

December — Dr. Aronow publishes in Family Practice Recertification an article entitled "The Effect of Smoke on the Nonsmoker," in which he states, "Even people who do not smoke are more appropriately termed passive smokers than nonsmokers. Passive smoke inhalation may precipitate or aggravate existing respiratory infections and allergic reactions in otherwise healthy persons."

1980

January — Environmental Research publishes results of a study suggesting that asthmatic subjects do not have an unusual sensitivity to ETS.

March — Speaking at an American Heart Association meeting, Dr. William Harlan, chairman of an AHA task force studying the environment and cardiovascular disease, states, "There is little evidence that air, noise, water pollution or even cigarette smoke from a neighbor play important roles in the development of heart disease. Considerable concern has been expressed regarding levels of carbon monoxide to which nonsmokers might be exposed when in a closed environment containing smokers. Studies indicate that nonsmokers have

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negligible levels of carboxyhemoglobin under conditions of good ventilation and with no ventilation have acceptably low levels."

March — The New England Journal of Medicine publishes a study by White and Froeb claiming that "chronic exposure to tobacco smoke in the work environment is deleterious to the nonsmoker and significantly reduces small-airways function."

Responding to press inquiries about the study, TI notes that it generally agrees with the comment in an accompanying Journal editorial that "the evidence that passive smoking in a general environment has health effects remains sparse, incomplete and sometimes unconvincing." TI also notes that one of the authors of the study, James White, was a leader in the anti-smoking referendum campaign in California in 1978.

May — EPA staffer James L. Repace and researcher Alfred H. Lowrey publish in Science magazine an 8-page article entitled "Indoor Air Pollution, Tobacco Smoke and Public Health, which states, "Clearly, indoor air pollution from tobacco smoke presents a serious risk to the health of nonsmokers. Since this risk is involuntary, it deserves as much attention as outdoor air pollution."

August — The New England Journal of Medicine publishes letters critical of the White/Froeb research on ETS and respiratory effects. Three German scientists note that the research is "difficult to believe" and the "methods...open to criticism." Gary Huber notes "serious questions about the validity of the measurements," and Allan Freedman notes "serious error in measurement of forced vital capacity."

December — Two doctors report in the New England Journal of Medicine a case of a claimed association between Raynaud's Phenomenon and passive smoking.

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1981

January — Dr. Takeshi Hirayama reports initial results of his prospective study of lung cancer risk among 91,540 nonsmoking wives of smokers in Japan. The initial analysis, appearing in the British Medical Journal, is based on 174 cases.

February — Dr. Dimitrios Trichopoulos publishes in the International Journal of Cancer results of his study of lung cancer risk among nonsmoking wives of smokers in Greece. The study concludes that "a nonsmoking woman whose husband is a regular smoker has a risk of developing lung cancer which is twice as high as that of a nonsmoking woman married to a nonsmoker." The authors note, however, that "the study has obvious limitations and is offered principally to suggest that further investigation of this issue should be pressed."

February — Commenting in Medical World News on the new spousal smoking studies, the outgoing director of the National Heart, Lung and Blood Institute states, "We just don't have any evidence for the same thing in this country."

March — The Medical Post of Toronto quotes Dr. Donald Brown of Toronto as claiming that the more a husband smokes, the greater the chance of his wife developing cancer of the cervix.

March — Critiques of the Hirayama research appear in New Scientist (Dr. H.J. Eysenck questions the plausibility of the results and requests Hirayama's data) and Medical World News (Sir Richard Doll questions why Japan's lung cancer rate has not increased if the study's results are accurate).

March — The American Journal of Public Health reports an analysis of data suggesting that children of smokers suffer more days of illnesses than children of nonsmokers. The authors of the study acknowledge, however, that it offers "no direct proof that adult smoking adversely affects children's health."

TI responds, "In any type of study like this there are a lot of other variables that should be looked at before you draw any conclusions."

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April — Criticism of the Hirayama research appears in the British Medical Journal. German researchers write that the "conclusions do not appear very well founded"; Dr. Theodor Sterling writes that the study failed to consider exposure to indoor pollution from heating and cooking equipment; West German scientists point out "inconsistencies"; and an additional scientist notes that possible confounding factors should be considered. Dr. G. H. Miller writes in support of the study.

May — Additional criticism of the Hirayama research is published in the British Medical Journal. Dr. P.R.J. Burch writes that women who marry smokers are more likely to be genetically predisposed to lung cancer than women who marry nonsmokers.

Dr. Hirayama responds to the published criticism.

May — Environmental Research publishes a 9-page commentary from researchers Hammond and Selikoff regarding the Hirayama and Trichopoulas research. "With so much at stake, we hesitate to express an opinion at this time on whether 'passive smoking' increases the risk of lung cancer to a significant degree." They add, however, that it will not take "a great deal more evidence to firmly convince us that this is so."

June — TI releases a cablegram notifying the Japan National Cancer Center Research Institute of "an arithmetical error" in the Hirayama research identified by three independent statisticians. TI releases the names of the three statisticians who confirmed the error and notes "...[W]e regard this discovery...as very grave. Many persons have been unfortunately misled and unduly alarmed by the Hirayama study."

June — The American Cancer Society study of spousal smoking and lung cancer, conducted by Dr. Lawrence Garfinkel, is reported in the Journal of the National Cancer Institute. A press release issued by the American Cancer Society notes that the study "shows that nonsmoking women married to cigarette smokers have little if any increased risk of getting lung cancer, compared to nonsmoking women whose husbands do not smoke."

TI issues a statement noting that it is "most pleased to learn" of the new study.

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June	In an AP story from Tokyo, Dr. Hirayama defends his results against TI charges of arithmetical error and challenges the statisticians who identified the error to publish their work. However, Dr. Hirayama's superior, Dr. Sugimura, tells The Tobacco Observer that he doubted Hirayama's conclusion from the beginning and that the Japan Cancer Center will acknowledge the error if TI's analysis proves to be correct.
August	A report prepared for EPA by the National Academy of Sciences identifies tobacco smoke as a source of indoor pollution, and a summary released by the NAS notes, "The nonsmoker absorbs measurable amounts of carbon monoxide and nicotine, as well as small amounts of other smoke constituents, owing to involuntary smoking." The report urges consideration of prohibition or restriction of smoking in public buildings and of a cigarette tax hike to pay for increased ventilation.
September	The American Cancer Society criticizes TI's advertising campaign on the Hirayama and Garfinkel studies, saying the ads "left out all the caveats in the Garfinkel paper."
September	The American Review of Respiratory Disease publishes a review by Johns Hopkins researchers regarding effects of passive smoking on children which states that the evidence "is not yet conclusive," but "is sufficiently suggestive...to warrant serious consideration."
October	Further criticism of the Hirayama research is published in the British Medical Journal. TI President Kornegay and statistician Marvin Kastenbaum write to point out statistical errors in the research; two scientists from the Massachusetts Institute of Technology and Dr. Hirayama write in defense of the statistical test used.
October	The German journal MMW publishes a critical evaluation of Hirayama's research by G. Lehnert in which he concludes, "There is still no scientifically convincing proof that the risk of lung cancer is increased by so-called passive smoking." Lehnert describes Hirayama's reasoning as "completely incomprehensible," says his estimation of how much ambient smoke is inhaled is neither realistic nor plausible and says Hirayama's work should not be used to promote the

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regulation of public smoking.

December — British scientists report a study in the British Medical Journal concluding that "passive smoking at home seems to affect the growth of children." The study reports an inverse association between height and number of smokers in a home.

December — St. Louis University researchers report in Chest that nonsmokers with bronchial asthma demonstrate increased airway resistance after being exposed to sidestream cigarette smoke for one hour in an environmental chamber. Healthy nonsmoking controls showed no change in pulmonary function. However, the researchers note, "We were not able to exclude the possibility that these changes in pulmonary function were emotionally related to cigarette smoke.

1982

Uncertain — Researchers Chan and Fung report in Cancer Campaign Vol.6, Cancer Epidemiology results of a study of ETS and lung cancer risk in a Hong Kong population. Their data suggest no association between spousal smoking and risk of lung cancer.

January — The 1982 Surgeon General's report is released and includes a chapter on "Involuntary Smoking and Lung Cancer." The chapter notes that two epidemiologic studies have reported a statistically significant increase in lung cancer with marriage to a smoker, and a third reported increased risk that was not statistically significant. The report concludes, "Although the currently available evidence is not sufficient to conclude that passive or involuntary smoking causes lung cancer in nonsmokers, the evidence does raise concern about a possible serious public health problem."

April — A study published in the British Medical Journal reports that all 56 nonsmokers tested after a morning at work with smokers had measurable amounts of nicotine in both saliva and urine. "The amount of tobacco smoke absorbed by nonsmokers can reach concentrations similar to those found after 'light' cigarette smoking," the

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authors state.

April — Dr. Heinz Witting, writing in the Ochsner Report, reports a research project which he said shows that passive smokers fared as poorly as smokers on certain pulmonary tests.

April — The American Academy of Pediatrics issues a policy statement noting that it "considers tobacco smoking to constitute one of the most important sources of environmental contamination and a significant threat to the health of children." The statement further urges that physicians support legislation prohibiting smoking in public places frequented by children.

April — University of Arkansas scientists report in the American Review of Respiratory Disease that sidestream smoke is deposited in the respiratory tract at much lower levels than mainstream smoke. They add, however, that "it cannot be assumed that sidestream smoke is innocuous."

May — Dr. Roy Shepard, writing in the Canadian Family Physician, said that "studies of passive smoking show that while smoke is an unpleasant irritant, it appears to have no lasting effects on healthy passive smokers." But he urged public smoking restrictions to protect young children and asthmatics.

May — Researcher P.N. Lee publishes a critique of four recent ETS studies -- Hirayama, White/Froeb, Trichopoulas and Miller -- in Lancet.

May — Ohio State University researchers report in Lancet that they detected cotinine in the amniotic fluid of women exposed to their husbands' smoke. The researchers call their study "limited" and say it "suggests that prolonged exposure to sidestream tobacco smoke is necessary if appreciable amounts of cotinine are to be found."

June — Based on health interview surveys in Michigan and Massachusetts, Harvard researchers report in the American Journal of Public Health that between 18 and 34 percent of children's asthma can be attributed to maternal smoking.

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June	An article by Theodor Sterling and Associates evaluating the literature on cigarette smoking and indoor pollution is published in the Journal of the Air Pollution Control Association. Sterling criticizes ETS studies for obtaining data under highly artificial conditions with cigarettes smoked at abnormally high rates.
July	Researcher Charles Rossiter writes in Lancet that "There is now enough clinical, epidemiolgical and physiological evidence to conclude that passive smoking is a serious health hazard."
September	Austrian heart researchers write in Lancet that "Although not much is known about the long-term influence of passive smoking on the risk for development of atherosclerosis, our data do indicate that passive cigarette smoking, besides being an important social issue, may be a health problem too."
October	Surgeon General Koop and Dr. Joanne Luoto, acting director of the Office on Smoking and Health, write an article on smoking and health in Public Health Reports which states, "Although the evidence suggests that involuntary smoke exposure may increase the risk of lung cancer in nonsmokers, the limitations in data and study design do not allow judgment on causality at this time.

1983

April	The American Journal of Epidemiology publishes research by French scientists on passive smoking and chronic airflow limitation, based on spirometric measures. The researchers say their study confirms White and Froeb's conclusions "on the noxious role of passive smoking."
May	A workshop on "Respiratory Effects of Involuntary Smoke Exposure" sponsored by the National Institutes of Health and the National Heart, Lung and Blood Institute concludes that the effect of ETS on respiratory function "varies from negligible to quite small."

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June	An EPA peer review committee advises against relying on Aronow's carbon monoxide test results in setting air quality standards, noting concerns about "lost and discarded data, poor quality of available data, lack of quality control and inadequate record-keeping."
July	Richard Peto states at the Fifth World Conference on Smoking and Health that the chief relevance of passive smoking is "political rather than health."
August	Appearing as an unscheduled witness at a House Science and Technology Subcommittee hearing on indoor air quality, EPA's Repace testifies that studies suggest 100 to 1000 people die each year as a result of exposure to ETS. He added that nonsmoking workers get the equivalent of three low-tar cigarettes each day from smoking coworkers. Dr. Jan Stolwijk testifies at the same hearing that "the evidence in the literature [on workplace smoking] is not conclusive."
August	A case-control study of 213 nonsmoking women reported in Archives of Environmental Health suggests "no significant effect on forced expiratory volume from exposure to smokers in the home." The research was based on data from the Tecumseh, Michigan Community Health Study.
September	Researcher P. Correa publishes in Lancet a report of a study of spousal smoking and lung cancer risk in a Louisiana population. The researchers state that "nonsmokers married to heavy smokers had an increased risk of lung cancer, and so did subjects whose mothers smoked."
October	TI sends to the House Committee on Science and Technology a 6-page statement rebutting claims made by Repace at the August hearing. The TI statement says Repace's claims that nonsmokers get the equivalent of up to 10 cigarettes a day from ETS exposure "appear to have little basis in scientific fact." ETS health effects studies relied upon by Repace "are seriously flawed and are inconsistent with other studies in the literature," the statement continued.

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November — Dr. Dimitrios Trichopoulos, author of the 1981 study of spousal smoking and lung cancer risk among a population of Greek women, reports additional results of his research in Lancet. Trichopoulos states, "Although doubt must remain about the histological evidence and hospital differences, there are now twice as many cases and 50 percent more controls; the results remain substantially the same." He adds that his study "increases the credibility of the hypothesis implicating passive smoking as a factor in lung cancer."

November — At a press conference releasing the 1983 Surgeon General's report, Surgeon General Koop responds to a query about ETS and cardiovascular disease with the statement, "To the best of our knowledge, there has never been an adequate study on sidestream smoking" that dealt with coronary heart disease. Koop adds that studies have reported links between ETS and cancer and between ETS and respiratory effects in children and says it might be possible to "extrapolate" to CHD from these studies. But, he says, "We do not have any firm evidence that there is a causal relationship.

November — Researcher Scott Weiss publishes in the American Review of Respiratory Disease a review entitled "The Health Effects of Involuntary Smoking."

December — The New York State Journal of Medicine publishes an issue on "The World Cigarette Pandemic" featuring papers from five Surgeons General and an interview with current Surgeon General Koop. Koop identifies ETS as "a very serious environmental health hazard" and states, "I think that we are going to prove without any doubt how dangerous [secondhand smoke] is to the nonsmoker, starting with the unborn and going right on through to the elderly."

1984

Uncertain — Researchers Kabat and Wynder publish in Cancer results of a study of lung cancer risk factors among nonsmokers, in which they state, "Preliminary data on exposures to passive

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	inhalation of tobacco smoke...showed no differences except for more frequent exposure among male cases than controls to sidestream tobacco smoke at work."
Uncertain	Scottish researcher C. R. Gillis reports results of an analysis of spousal smoking and lung cancer risk based on data from a prospective study. Gillis reports excess lung cancer risk among ETS exposed individuals but notes, "Insufficient time has elapsed since completion of the recruitment phase of this study...to allow firm conclusions to be based on the results."
Uncertain	P. Buffler et.al. report in Lung Cancer: Causes and Prevention results of a study of spousal smoking and lung cancer risk in a Texas population. The researchers report that the association between spousal smoking and lung cancer was not statistically significant.
January	A TI grant supports a scientific conference on ETS in Geneva, Switzerland, featuring presentations by medical researchers from nine countries. The symposium concluded, according to chairman Ragnar Rylander, that the available evidence does not confirm that ETS causes chronic health problems in nonsmokers. The proceedings of the symposium were published in the European Journal of Respiratory Diseases.
January	Hirayama updates data from his prospective study of spousal smoking in a letter to Lancet, in which he writes that husbands' smoking increases lung cancer risk in nonsmoking wives by 60 percent.
February	American Review of Respiratory Disease publishes a study of 271 Tuscon families that reports no relationship between parental smoking and children's respiratory function, and no relationship between household smoking and respiratory effects in adults.
March	EPA's Repace writes in a letter to Lancet that if data from Garfinkel's ETS study were adjusted to consider exposure at work, his results might be consistent with those reported by Hirayama.
March	The American Review of Respiratory Disease reports results of a longitudinal study of 10,000 children in six cities. The study provides "strong support for a causal effect of sidestream cigarette smoke

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on increased respiratory illness" based on both maternal and paternal smoking.

April — The American Health Foundation, the International Green Cross and other international organizations sponsor a "Symposium on Passive Smoking from a Medical Point of View" in Vienna, Austria. Summarizing the symposium's conclusions, American Health Foundation scientist Ernst Wynder states, "Should lawmakers wish to take legislative measures with regard to passive smoking, they will, for the present, not be able to base their efforts on a demonstrated hazard from passive smoking."

April — G.H. Miller reports results of his latest ETS study in the Western Journal of Medicine, concluding that his data provide "support for the hypothesis that long-term passive smoking leads to excess cancer deaths in exposed nonsmokers."

TI spokesmen responding to the research note that the study included all types of cancer, not just those most frequently associated with smoking. They also question Miller's definition of a smoker as one who had smoked 20 packs of cigarettes at any time during his lifetime. Miller's method of research, identifying deceased women through obituary notices and determining cause of death through interviews with surviving family members, "is not a recognized scientific procedure for coming up with a database," TI's representatives state.

April — The New England Journal of Medicine publishes results of a study of 51 infants which suggests that those exposed to tobacco smoke have "significantly higher" concentrations of nicotine and cotinine in body fluids than infants not exposed.

May — Surgeon General Koop releases his 1984 Report to Congress, including a chapter on passive smoking which calls for additional research. At a press conference promoting the report, Koop states that the "evidence is very solid" on the issue of ETS effects in children. He adds, "We have more work to do. I suspect we will have very solid evidence before long."

In anticipation of the report's release, TI distributes press packages including reports from

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the Rylander, NIH and Vienna workshops, noting that all of the symposia failed to support claims that ETS causes chronic health problems.

June — A study of 15,000 children published in the British Medical Journal reports "a significant link between parental smoking and self-reported frequent coughs...."

June — Dutch researchers writing in the British Medical Journal report that their 25-year study of 1,007 married couples suggested no association between passive smoking and increase in total mortality. "The possible absolute risk carried by passive smoking is probably small," their report states.

June — A UCLA study of 971 children reported in American Review of Respiratory Disease showed an association between maternal smoking and reduced lung function but not between maternal smoking and chronic respiratory symptoms.

August — The American Review of Respiratory Disease publishes a study associating parental smoking with diminished pulmonary function in schoolchildren.

October — Results of a study of cotinine measures in 472 nonsmokers exposed to ETS are published by Dr. Shigeru Matsukura of Japan's Kyoto School of Medicine. The study reports that cotinine levels in nonsmokers whose family members smoked more than 40 cigarettes per day were nearly identical to those in light regular smokers. The researchers propose restrictions on contact between smokers and nonsmokers "that might mitigate the deleterious effects, if any, of passive smoking," according to a New York Times report of the study. They further recommend that family members not smoke in the presence of children or nonsmokers and that smoking be discouraged on the job.

October — A study by researcher Linda Koo of lung cancer risk among 400 Hong Kong women, published in the Journal of Experimental and Clinical Cancer Research, suggests no association with ETS.

November — A study by Repace and Lowrey estimates 500 to 5,000 nonsmoker lung cancer deaths in the U.S. from passive smoking and calls ETS the most dangerous airborne carcinogen. The authors

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acknowledge that their study is "preliminary and subject to confirmation by further research," but add, "Passive smoking appears to pose a public health risk larger than the hazardous air pollutants from all industrial emissions combined."

TI spokespersons responding to the study state, "The initial glance at it indicates it has a major problem in that it relies on data that have been seriously questioned. I tend to think that this study is like a house of cards: when the underpinning is pulled out, the whole paper falls apart."

CBS News coverage of the study includes interviews with Repace, John Banzhaf and a TI spokesperson. The TI official states, "It's looking like smokers are the only minority left in this country that it's safe to hate."

November — The Canadian Medical Association Journal publishes a review concluding that there may be no "safe" level of exposure to ETS, but noting that acute effects "are probably limited to the one-fifth of the population with pre-existing health conditions that are aggravated by exposure to tobacco smoke."

1985

Uncertain — A doctoral candidate at the University of Hong Kong completes a study of lung cancer risk among a Chinese population and reports increased risk, statistically significant at the 10 percent level, based on exposure to ETS.

January — A study of 518 cancer cases published in the American Journal of Epidemiology concludes that cancer risk from passive smoking is significantly increased among nonsmoking females married to smokers, but only for those females between the ages of 30 and 49. Nonsmokers whose spouses smoked had a twofold elevated risk overall, while smokers had a 30 percent increased risk. The researchers note that elevated risks were seen for several specific cancer sites and were not limited to lung cancer or other "smoking-related" tumors.

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February	EPA's Carcinogen Assessment Group reviews the Repace study and supports the finding of 500 deaths per year as a result of ETS exposure, but questions the conclusion that as many as 5,000 could be affected, according to a UPI report. TI responds that Repace is "out of his area of expertise here. Even the Surgeon General has not asserted that ambient tobacco smoke causes cancer in nonsmokers."
March	The New England Journal of Medicine publishes two letters criticizing the Matsukura research on cotinine levels in nonsmokers exposed to ETS. Three German researchers write that discrepancies between Japanese findings and those of western studies suggest Matsukura's test method for cotinine may not have been sufficiently specific. A University of Georgia researcher cited procedural, statistical and conceptual flaws, stating, "Any conclusion drawn from this research is at best speculative."
April	George Washington University researchers report a study of 1,144 infants which concludes, "Passive smoking is dangerous to the health of infants." The study, which appeared in Pediatrics, suggests that children of smoking mothers have many more cases of respiratory illness during their first year than children of nonsmokers.
April	Dr. Michael Russell writes in New Scientist of a study reporting measurable levels of nicotine and cotinine in the body fluids of nonsmokers, and estimates that approximately 1,000 British nonsmokers die annually from effects of ETS.
April	An hour a day in a room with a smoker is nearly 100 times more likely to cause lung cancer than 20 years spent in a building containing asbestos, British epidemiologists Doll and Peto write in New Scientist. The article does not indicate how the researchers arrived at this conclusion.
April	The Journal of the National Cancer Institute reports results of a study by Wu et.al. suggesting slightly elevated relative risks for passive smoking from spouses and at work among 149 adenocarcinoma and 72 squamous cell lung cancer patients. The risk increases were not statistically significant.

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May — Dr. Cedric Garland publishes in the American Journal of Epidemiology a report of his study of cardiovascular disease in nonsmoking wives of smokers. The study, based on a population of 695 women, suggests that women married to smokers died of heart disease at a rate two and a half times that in women married to nonsmokers. Garland states in UPI reports of the study, "It is possible that passive exposure to smoke might also lead to heart disease."

May — Former National Cancer Institute researcher Gio Batta Gori publishes in ASHRAE Transactions a review of passive smoking studies which concludes, "Despite numerous and extensive trials, available evidence has not been found that a massive public health problem attributable to passive smoking exists.... The likelihood of finding future correlations of passive smoking exposure and significant public health problems is negligible."

May — The Journal of Clinical Pharmacology publishes an analysis by Dr. Domingo Aviado which questions the validity of extrapolations based on Hirayama's research. "Observations on disease causation and drug responses cannot be readily transposed from continent to continent because of differences in ethnicity and sociocultural factors in human population groups."

May — Dr. Dale Sandler publishes in the American Journal of Public Health results of a study of adult cancer risk from childhood exposure to ETS. Sandler reports that her study data, based on 438 cases, suggest the greatest relative risk with paternal smoking, and only slight increase in overall risk with maternal smoking.

June — TI files comments with a National Academy of Sciences Committee studying airline cabin air quality, noting, "There exists no reported medical evidence that [tobacco smoke] particulates in cabin air endanger the health of passengers or crew."

TI witnesses testify at a public hearing held by the NAS committee. Drs. Salvatore DiNardi, Mark Reasor and Sorell Schwartz testify that ETS is one of many components of indoor air quality; Dr. Philip Witorsch criticizes studies claiming that ETS is a hazard to compromised individuals.

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June	EPA's Repace publishes in Environment International his study attributing up to 5000 lung cancer deaths per year to ETS exposure.
June	TI publishes "Situation Report: Tobacco Smoke in the Air" critiquing Repace's work.
June	Texas Medicine publishes a review of ETS health effects which concludes, "Exposure to secondhand smoke is potentially harmful to both healthy and debilitated individuals."
July	A study reported at a meeting of the American Academy of Allergy and Immunology concludes that asthmatic children whose mothers smoked showed symptoms 47 percent more severe than those with nonsmoking mothers. Paternal smoking did not affect children's bronchial reactivity, according to the report.
September	The Fourth World Conference on Lung Cancer, held in Toronto, features a presentation by Dr. S. Akiba focusing on passive smoking and risk of lung cancer among Japanese women. Akiba reports data suggesting a 50 percent increase in risk among female nonsmokers married to smokers, with highest risk observed among women working outside the home.
September	The second Garfinkel lung cancer study, based on a population of 536 U.S. women, is published in the Journal of the National Cancer Institute. Garfinkel reports elevated lung cancer risk among women married to smokers, but notes that the increase was not statistically significant.
October	A study reported in the British Medical Journal finds that saliva cotinine concentrations in nonsmoking schoolchildren are strongly related to parental smoking habit. The study claims that children's exposure to maternal smoking is comparable to smoking 50 cigarettes annually.
November	Analysis by Svendson and colleagues of a subgroup of MRFIT study participants for ETS exposure suggests that men married to smokers had higher levels of carbon monoxide in the blood, performed less well on pulmonary function tests and died at a higher rate than men married to nonsmokers. The risk of death or heart problems appeared higher for those whose wives smoked 20 or more cigarettes daily, according to the report. Results of the

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analysis were presented at the American Heart Association's annual conference.

1986

Uncertain	Dalager et.al. report in Cancer Research results of a study which suggests no statistically significant increase in lung cancer risk based on marriage to a smoker in a U.S. population.
February	A study reported in Chest finds no measurable acute effects of passive smoking in young asthmatic patients.
May	The Office of Technology Assessment of the U.S. Congress releases a report entitled "Passive Smoke in the Workplace: Selected Issues," which concludes that a positive association exists between ETS and acute effects in the workplace but that "the case is less clear for the contribution of passive smoking to chronic diseases. Debate about the link between passive smoking and lung cancer is one of the most contentious in public health today, and a similar contention has arisen about a possible link with heart disease," the report states.
June	The House Subcommittee on Health and the Environment holds hearings on legislation to require nonsmoking areas in federal buildings. TI sponsors testimony from Gray Robertson and Nancy Balter.
July	The British Journal of Cancer publishes results of a study conducted by P.N. Lee which concludes that passive smoking poses no significant increase in risk of lung cancer, bronchitis or heart disease. The study, based on data from 12,000 subjects, concludes that nonsmokers would require 11 hours of ETS exposure to inhale the ash and sold matter equivalent and 50 hours to inhale the nicotine equivalent of a single cigarette.
July	American Lung Association consultant A. Judson Wells first makes the claim that 46,000 deaths per year are attributable to ETS.

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July

The World Health Organization's International Agency for Research on Cancer issues a report from Lyon, France, on the carcinogenicity of tobacco smoke which includes the statement, "The observations on nonsmokers that have been made so far are compatible with either an increased risk from 'passive' smoking or an absence of risk. Knowledge of the nature of sidestream and mainstream smoke...leads to the conclusion that passive smoking gives rise to some risk of cancer."

September

The National Academy of Sciences releases a report entitled "The Airliner Cabin Environment: Air Quality and Safety," in which it recommends a federal ban on smoking on all domestic flights.

TI and RJ Reynolds hold a news conference prior to the report's release during which they argue that existing rules separating smokers from nonsmokers are satisfactory, offer a new study indicating that most seats in nonsmoking sections are free from ETS constituents and point out that the panel report lacked "actual, detailed in-air testing data establishing the need for further restrictions on smoking."

The NAS panel acknowledged the paucity of empirical evidence on health effects of air quality in airplanes and noted, "It is unusual although not unprecedented for an academy report not to cite decisive scientific evidence to support a major recommendation.... In this instance, the panel succeeded in convincing those manning the academy's formidable report review mechanism that the weight of evidence, incomplete as it is, justified the ban."

October

An international symposium on "experimental toxicology of passive smoking" is held in Essen, Germany, sponsored by the German Society for Occupational Medicine, the Federal Ministry of Youth, Family and Health and the Ministry of Science and Research.

November

The National Research Council releases its report entitled "Environmental Tobacco Smoke: Measuring Exposure and Assessing Health Effects" which concludes that ETS exposure is harmful to spouses of smokers and to children.

The committee adds that studies about workplace

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issues, cardiovascular disease risk and respiratory effects are inconclusive.

During a news conference after the report's release, a TI spokesperson notes, "The NRC report marks a major move away from the extreme and unsupportable claims made against ETS by the anti-smoking movement. While far from being a perfect document, the NRC report is the first milestone toward a calmer, even-handed discussion of ETS."

November — Related articles on ETS appear in the November issues of three publications. The Western Journal of Medicine calls for smokers to "be educated about the risks of passive smoking and instructed to smoke outdoors or in an area in which other people are unlikely to breathe tobacco smoke." An analysis in the British Medical Journal concludes "that breathing other people's smoke is a cause of lung cancer." The article suggests that a third of lung cancer cases in nonsmokers living with smokers, and a quarter of nonsmoker lung cancer cases overall, are attributable to ETS. A guest editorial in the Journal of the National Cancer Institute says, "it has been difficult to quantify actual exposure to ETS, and estimates based on smoking habits of spouses are relatively crude approximations." The authors call for further study to clarify the causal nature of the relation between lung cancer and ETS, noting however that "it would seem prudent" to regard the existing evidence as highly suggestive that long-term exposure to ETS increases the risk of lung cancer.

December — TI releases "Tobacco Smoke and the Nonsmoker: Scientific Integrity at the Crossroads" and holds a news conference to announce a request to the Department of Health and Human Services to investigate censoring of scientists by activist HHS employees and inaccurate scientific statements by the Surgeon General.

December — Researcher P.N. Lee publishes a letter in the British Medical Journal in response to the study by Wald et.al., noting that apparent ETS risk "may come mainly from bias due to misclassification of smokers coupled with concordance of smoking habit between spouses."

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1987

Uncertain	A study by Brownson et.al. of risk factors for lung adenocarcinoma among a Denver population, reported in the American Journal of Epidemiology, suggests increased risk for female nonsmokers married to smokers, but the increase was not statistically significant.
Uncertain	T.H. Lam and colleagues report in the British Journal of Cancer a statistically significant increase in lung cancer risk among female nonsmokers married to smokers in their case-control study of a Chinese population.
Uncertain	Gao and colleagues report in the International Journal of Cancer a study of risk factors for lung cancer in a Chinese population which suggests "no significant increase in risk for overall exposure to ETS during childhood or adult life."
Uncertain	The American Journal of Epidemiology publishes an ETS-lung cancer study by Pershagen et.al., which reports a statistically significant increase in lung cancer risk among nonsmoking Swedish women married to smokers.
Uncertain	Researcher L. Koo publishes in the International Journal of Cancer results of a study of spousal smoking and lung cancer risk among a population of Chinese women, which suggested no statistically significant increase in risk.
January	Surgeon General Koop releases the 1986 Report to Congress entitled "The Health Consequences of Involuntary Smoking," which concludes that ETS is a cause of lung cancer in adults, that it is associated with increased respiratory effects in children and that "simple separation of smokers and nonsmokers within the same air space may reduce, but does not eliminate, exposure of nonsmokers to environmental tobacco smoke." At a news conference to brief reporters on the report's contents, Koop states, "The time for delay has passed and measures to protect the public health are required now."
March	Statistician Nathan Mantel publishes a letter in the British Medical Journal which concludes that it is "unlikely" that any epidemiologic study can establish the risk of lung cancer from ETS.

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May	An ETS-lung cancer study by Humble et.al., which reports "a two-fold increase in risk of lung cancer" among nonsmokers married to smokers, is published in the American Journal of Public Health.
May	A doctoral candidate at Yale University completes the largest case-control study reported to date in the scientific literature. Varela's data reflect no statistically significant associations between lung cancer risk and exposure to ETS from a spouse, in the workplace or in social settings.
September	Dr. W. A. Crawford publishes a letter in Environment International rebutting the Repace and Lowrey risk assessment of ETS.
November	A tobacco industry grant helps fund an international conference on indoor air quality in Tokyo, Japan, sponsored by the Council for Environment and Health. The proceedings of the conference are published in a supplement to the International Archives of Occupational and Environmental Health.
December	In a report for the American Heart Association, researcher W.B. Moskowitz states that ETS exposure produces thicker heart walls, stiffer aortas and lower levels of "good" cholesterol.
December	Congress enacts legislation banning smoking on all domestic commercial airline flights of two hours or less.

1988

Uncertain	American Lung Association consultant A. Judson Wells publishes in Environment International his "Estimate of Adult Mortality in the United States from Passive Smoking," in which he attributes a total of 46,000 deaths per year to exposure to ETS. This total, according to his analysis, includes 3000 lung cancer deaths, 11,000 "other cancer" deaths and 32,000 cardiovascular disease deaths.
Uncertain	Geng and colleagues report in a publication entitled Smoking and Health results of an ETS

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case-control study among a Chinese population which suggests a statistically significant association between marriage to a smoker and risk of lung cancer among female nonsmokers.

Uncertain — A second ETS-lung cancer study published in Smoking and Health, conducted by Inoue and Hirayama in Japan, reports no statistically significant increase in lung cancer risk with marriage to a smoker.

Uncertain — "No association was observed between risk of lung cancer and smoking of husband or passive smoke exposure at work," according to results of a study by Shimizu and colleagues of lung cancer risk among Japanese women. The report appeared in the Tohoku Journal of Experimental Medicine.

January — Katada and colleagues publish in a Japanese publication results of a study of spousal smoking and lung cancer risk which reports a statistically significant increase in lung cancer risk among nonsmoking females with current exposure to ETS.

March — Meridian Research releases a report entitled "Review of Four Studies Estimating the Risk of Exposure to Environmental Tobacco Smoke," prepared at the request of the Occupational Safety and Health Administration. The report concludes that there is insufficient data to support the determination that exposure to ETS in the workplace increases the risk of disease in nonsmokers.

June — The tobacco industry helps fund a conference on indoor and ambient air quality at Imperial College in London.

December — The tobacco industry helps fund a conference on indoor air quality sponsored by the National Academy of Science of Buenos Aires in Buenos Aires, Argentina.

1989

Uncertain — Svenson et.al. publish in Acta Oncologica results of a study reporting no statistically significant increase in lung cancer risk based on lifetime

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